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Embedded Derivatives in Modco and Similar Reinsurance Arrangements

by Richard H. Browne

Editor's Note: The section's GAAP list serve would be an appropriate forum for discussing concepts in this article.

At the AICPA 2002 National Conference on Current SEC Developments, the SEC staff announced their views that certain reinsurance agreements, such as modified coinsurance arrangements (modco), under which the ceding company retains the underlying assets and the reinsurer receives an investment return based on that underlying referenced pool of assets, contain an embedded derivative that must be accounted for in accordance with Statement of Financial Accounting Standards No. 133, *Accounting for Derivative Instruments and Hedging Activities* (FAS 133).

In January 2003, the FASB announced that it would clarify this interpretation of FAS 133 in a derivative implementation group (DIG) Issue. On April 10, 2003, the FASB posted the cleared DIG Issue No. B36, *Embedded Derivatives: Modified Coinsurance Arrangements and Debt Instruments That Incorporate Credit Risk Exposures That Are Unrelated or Only Partially Related to the Creditworthiness of the Obligor under Those Instruments*. DIG B36 is effective for the first fiscal quarter beginning after September 15, 2003.

DIG B36 includes an example of a modified coinsurance arrangement that includes an embedded derivative that must be identified and accounted for separately from the debt host at fair value, provided that the reinsurance arrangement is not already accounted for at fair value. This bifurcation would be necessary by both the ceding company and the assuming company.

DIG B36 requires application of the interpretation to both existing and future modco and

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— If you have any modco or similar agreements, and you think you have done everything you need to for FAS 133, you'll want to read this. FAS 133 is coming (again!) soon to a contract near you. Effective for year end!

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similar arrangements for quarters beginning after September 15, 2003, which, for calendar year companies, means that compliance must begin with the upcoming year-end statements.

This article examines the characteristics of modified coinsurance and similar arrangements, which may result in the presence of an embedded derivative. It reviews the criteria that must be satisfied in order for an instrument to be considered an embedded derivative under FAS 133 and, finally, presents some of the considerations necessary to properly account for the embedded modco derivative according to FAS 133.

MODIFIED COINSURANCE AND SIMILAR ARRANGEMENTS

Under modco arrangements the reinsurer participates, on a pro-rata basis, in all premiums and benefits from the underlying contracts. The ceding company retains control of the invested assets necessary to support the reserves for the underlying contracts. The reinsurer funds the statutory reserves on the reinsured portion of the risks through the *modco reserve adjustment*. The ceding company credits interest to the reinsurer on the statutory reserves at the *modco interest rate*.

It is useful to think of modco as consisting of traditional coinsurance of the risks, combined with a loan from the reinsurer to the ceding company. The loan balance is maintained at an amount equal to statutory reserves via the modco reserve adjustment, and the loan interest rate is the modco interest rate. Using this interpretation, the reinsurer's balance sheet would show both a reserve for future policy benefits and also a "funds withheld asset" equal to the loan balance. The ceding company's balance sheet would show a reserve liability to the policyholder, invested assets in the underlying portfolio, a reserve recoverable from reinsurers asset, and a "funds withheld liability" equal to the loan balance:

Direct Writer

Assets

Invested Assets
Reserve Recoverable

Liabilities

Reserve
Loan (FWA)

Reinsurer

Assets

Loan (FWA)

Liabilities

Reserve

In most modco arrangements in the United States, the modco interest rate is equal to the earned interest rate on the underlying portfolio of invested assets, which are typically held in a trust, or some other legally segregated portfolio, or is based on the ceding company's return on general account assets. The reason for this is that this approach will assure transfer of investment risk and allow the arrangement to qualify for reinsurance accounting (for the ceding company) under NAIC rules.

It is precisely this situation, when the reinsurance arrangement provides for sharing of investment results on a referenced pool of assets, that is the concern of DIG B36. The conclusion is that, to the extent the investment return includes credit risk beyond the counterparty credit risk of the ceding/assuming company, or other risks not clearly and closely related to the funds withheld asset/liability, the arrangement will include an embedded derivative. In order to see how this conclusion is reached, it is necessary to understand the criteria under FAS 133 for a particular instrument to qualify as an embedded derivative.

FAS 133 EMBEDDED DERIVATIVE CRITERIA

A financial instrument that contains an embedded derivative is called a hybrid instrument, which consists of a host contract and the embedded derivative. In order to be considered an embedded derivative, the following criteria must be met:

1. The embedded derivative must qualify as a derivative as defined in paragraph 6 of FAS 133. The following required characteristics of a derivative are described in paragraph 6:

- There must be an *underlying* and/or a *notional*. Usually, the value of the embedded derivative is determined from the application of the underlying

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to the amount of the notional. In the case of a modco arrangement, the notional is the funds withheld asset/liability, and the underlying is the return on the referenced pool of assets (i.e., the modco interest rate).

- At inception, there must be no or insignificant required net investment in the embedded derivative.
- Investment cash flows must be net settled in cash at each settlement date defined in the contract.

The conclusion of DIG B36 is that many modco arrangements contain an embedded credit derivative.

2. The economic characteristics and risks of the embedded derivative must not be clearly and closely related to the economic characteristics and risks of the host.

DIG B36 indicates that if the return on the underlying portfolio includes credit risk associated with the issuers of the underlying securities, this credit risk is to be distinguished from the credit risk of the ceding company (the counter-party risk), and this prevents the embedded cash flows from being clearly and closely related to the debt host (the funds withheld asset/liability) issued by the ceding company. The DIG reads: “The risk exposure of the ceding company’s general account assets or its securities portfolio is not clearly and closely related to the risk exposure arising from the overall credit worthiness of the ceding company, which is also affected by other factors. Consequently, the economic characteristics and risks of the embedded derivative instrument are not clearly and closely related to the economic characteristics and risks of the debt host contract.”

It should be noted that this treatment of credit risk is very different than the treatment of interest rate risk. Regarding interest rate risk, FAS 133, paragraph 61, suggests that when an embedded derivative related to interest rate risk exists and the host contract is a debt instrument, then in most cases the risks and characteristics of the embedded derivative are considered to be clearly and closely related to the risks and characteristics of the debt host.

3. The hybrid instrument is not carried at fair value under otherwise generally accepted accounting principles, with changes in the fair value of the instrument reported in earnings at each reporting period.

The conclusion of DIG B36 is that many modco arrangements contain an embedded credit derivative. For these, it will be necessary to bifurcate the funds withheld asset/liability (the hybrid instrument) into the embedded credit derivative and the host contract. Once the embedded derivative is identified and separated, it should be recorded as an asset/liability, and changes in its fair value should be recorded in GAAP earnings.

BIFURCATION OF THE FUNDS WITHHELD INTO THE CREDIT DERIVATIVE AND THE HOST CONTRACT

The funds withheld (FW) provide a return based on the modco interest rate, which is earned on a notional amount equal to the statutory reserves. The modco interest rate, which is the return on the referenced pool of assets, may be thought of as consisting of a risk-free rate of return plus a spread for the credit risk associated with the issuers of the securities in the referenced pool of assets. Therefore, at any point in time the market value of the FW asset (from the reinsurer’s point of view) is the market value of a risk-free asset with the same cash flows as the FW less the discount for the credit risk associated with the issuers of the securities in the reference pool. In particular, at the inception of the reinsurance arrangement there is an anticipated level of default activity that has been reflected in the determination of this discount for credit risk. This suggests that variations in this anticipated level of credit risk should be reflected in changes in the value of the embedded derivative.

Said another way, there is a “baseline” level of anticipated credit risk associated with the FW asset. As long as this baseline does not change, the value of the embedded derivative should not change. In subsequent periods the fair value of the embedded derivative may become positive or negative, reflecting deviations from the baseline in anticipated default experience. In subsequent periods the fair

value of the embedded derivative will reflect changes in the anticipated cash flows from the FW asset that occur because of credit quality changes in the reference pool.

The host contract would therefore be a “credit risk free” asset with the same anticipated cash flows as the FW asset. These anticipated cash flows would reflect the baseline level of default activity in the reference pool. The embedded derivative represents the risk associated with changes from the baseline.

To illustrate these points, the following section contains a simple example based on the modco reinsurance of a five-year SPDA contract, with underlying investments all in five-year zero coupon bonds. This example suggests that one approach to determining the fair value of the embedded derivative may be based on discounting projected cash flows of the FW asset. The very broad subject of fair value accounting is well beyond the scope of

this article. For an excellent discussion of principles of fair valuation of liabilities in an insurance context, some practical techniques, and a very good list of references on these topics, the reader is referred to the American Academy of Actuaries public policy monograph, *Fair Valuation of Insurance Liabilities: Principles and Methods*, published in September 2002.

A SIMPLE EXAMPLE

The example is based on a five-year SPDA with investments made in five-year zero coupon bonds, assumed to yield 4.75 percent. Credited interest is anticipated to be 4 percent. There is a 3 percent commission and a surrender charge of 4 percent graded out to 0 percent on any withdrawals. Withdrawal rates are assumed to be zero percent in year

Table 1

Year	Deposit	Commission	BOY Fund	Interest Credited	Withdrawals	EOY Fund	EOY CSV =Stat Res
1	10,000	300	10,000	400	-	10,400	9,984
2	-	-	10,400	416	541	10,275	9,967
3	-	-	10,275	411	1,069	9,618	9,425
4	-	-	9,618	385	1,500	8,502	8,417
5	-	-	8,502	340	8,842	-	-

Table 2

Year	BOY Assets	4.75% Investment Income	Surrenders	Assets Transferred	EOY Assets
1	9,700	461	-	177	9,984
2	9,984	474	525	(33)	9,967
3	9,967	473	1,047	(32)	9,425
4	9,425	448	1,485	(29)	8,417
5	8,417	400	8,842	(25)	-

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one, 5 percent in year two, 10 percent in year three, 15 percent in year four and 100 percent at the end of year five. The following table (Table 1) shows the anticipated fund development for a single deposit of \$10,000.

Deposits net of commissions are assumed to be invested in zero coupon bonds yielding 4.75 percent. The direct writing company will maintain assets backing the business equal to the statutory reserves, with any excess transferred to surplus. Table 3 shows the cash flows from assets, which are anticipated at inception. Investment income represents accrual of discount, and the 4.75 percent rate is assumed to be adjusted for anticipated defaults. The assets transferred represent the adjustment to assets in the reference pool to maintain a balance equal to statutory reserves.

The FW asset is always balanced to equal the statutory reserves. Table 4 shows the development of the anticipated FW asset cash flows. The cash flow is equal to assets released, which are equal to the surrenders plus assets transferred from Table 2.

Now let us assume that, at the end of year one, the anticipated default experience on the reference pool of bonds has deteriorated, to the

extent that the expected return is now 4.5 percent, rather than 4.75 percent. Assume also that no other anticipated assumptions have changed (withdrawal rates, credited interest). We can now project the cash flows from the FW assets under the anticipated experience at the end of year one as follows in Table 4.

The present value of FW asset cash flows at the end of year one, reflecting the revised anticipated default experience is now 9,899. The present value of FW assets cash flows at the end of year one, based on the baseline default experience, is \$9,984. This suggests that an estimate of the value of the embedded derivative is given by the difference, or \$9,899 - \$9,984 = (85).

In this example, the present values were taken at 4.75 percent. Appropriate discount rates to use in estimates of fair value based on discounted cash flows is beyond the scope of this article. Again, the reader is referred to the Academy's public policy monograph, *Fair Valuation of Insurance Liabilities: Principles and Method* for discussions about this issue.

Two additional observations related to this example should be made. First, in our simple example we assumed that during year one

Table 3

Year	Deposits	Allowance	BOY Mod Co Res	ModCo Interest	EOY Mod Co Res	Modco Adjustment	Surrenders	Net Settlement
1	10,000	300	9,700	461	9,984	9,523	-	177
2			9,984	474	9,967	(491)	525	(33)
3			9,967	473	9,425	(1,015)	1,047	(32)
4			9,425	448	8,417	(1,456)	1,485	(29)
5			8,417	400	-	(8,817)	8,842	(25)

Table 4

Year	BOY FW Assets	Investment Income	Assets Released	EOY FW Assets	FW Asset Cash Flow
0					(9,700)
1	9,700	461	177	9,984	177
2	9,984	474	491	9,967	491
3	9,967	473	1,015	9,425	1,015
4	9,425	448	1,456	8,417	1,456
5	8,417	400	8,817	-	8,817

Table 5

Year	BOY FW Asset	Investment Income	Assets Released	EOY FW Asset	FW Asset Cash Flow	PV Asset Cash Flows
0	-	-	-	-	-	-
1	-	-	-	9,984	-	9,899
2	9,984	449	466	9,967	466	-
3	9,967	449	990	9,425	990	-
4	9,425	424	1,432	8,417	1,432	-
5	8,417	379	8,796	-	-8,796	-

there were no changes in anticipated product experience with respect to persistency or crediting strategy. If in fact these factors had changed, it would be necessary to re-determine the baseline scenario to reflect the current persistency or crediting expectations, but with the original anticipated default experience. To see why this is true, note that if the anticipated default experience does not change, the value of the embedded derivative should not change even if the other factors do change. Also, the baseline scenario would need to be updated to true up for actual inventory changes during the first year.

Second, under most modco arrangements, the ceding company has the ability to move assets in and out of the reference pool, subject to certain asset type and quality restraints, as long as the book value of the assets is maintained equal to the statutory reserves. Such asset movements will cause shifts in the anticipated FW asset cash flows resulting from changes in anticipated default activity within the investment constraints. These would also need to be reflected in the estimate of the value of the embedded derivative.

WHAT IS THE HOST CONTRACT?

Some public comment about the proposed DIG has concerned the question about whether the host contract is really a debt instrument that appropriately belongs under the scope of FAS 133. These arguments would contend that the host contract is the entire reinsurance contract and any associated segregated asset agreements. Indeed, the two final observations made in the preceding section show how the cash flows under the host are intricately related to the underlying

policy behavior that is transferred via the reinsurance agreement and to the asset balancing allowed within investment constraints. Whether this view will gain favor with the SEC remains to be seen.

OTHER SIMILAR SITUATIONS

It is possible that the guidance in DIG B36 may be generalized or expanded to include similar insurance and reinsurance situations. Whenever an insurance or reinsurance contract provides for a total return based on a referenced pool of assets on a guaranteed basis, it will be necessary to analyze the instruments carefully to determine whether embedded derivatives exist. Possible examples that come to mind include any participating business that provides for a total return on a referenced pool of assets, and perhaps contracts with experience rating formulas that provide a total return to the contract holder.

CONCLUSION

DIG B36 interpretation will be effective in 2003. Therefore, both ceding and assuming companies should be taking inventory of their modco reinsurance treaties, their coinsurance/funds withheld treaties and similar arrangements, and reaching conclusions about the presence of embedded derivatives. It should be noted that coinsurance/fund withheld type treaties are similar to modco arrangements and would also be included within the scope of DIG B36. Implementation of accounting for embedded modco derivatives will consume significant time and resources, and will introduce new elements of volatility in GAAP income. ☒



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